

REMARKS

Claims 1-8 stand as rejected under 35 USC §112, second paragraph. It is the Examiner's position that the claims are unclear. Specifically, the Examiner asks for clarification of a number of issues regarding Claim 1. Claim 1 reads:

An inverse emulsion comprising the product of admixing an aqueous phase and an oil phase, wherein

- (1) the weight ratio between the aqueous phase and the oil phase (aqueous phase : oil phase) is from 4:1 to 2:1, and**
- (2) the inverse emulsion contains from 20 to 70 percent by weight of an anionic acrylic polymer, the anionic acrylic polymer being obtained by inverse emulsion polymerization of:**
 - (i) one or more anionic acrylic monomers dissolved in the aqueous phase, and**
 - (ii) at least one hydrophobic acrylic monomer dissolved in the oil phase,**

wherein

- (3) at least one of the one or more anionic acrylic monomers contains a strongly acidic functional group and**
- (4) the concentration of the at least one hydrophobic acrylic monomer is from 0.1 to 5 weight percent of the total weight of the one or more anionic acrylic monomers. (Clauses numbered for discussion purposes only.)**

The first issue raised by the Examiner is that the body of the claim after wherein does not further clarify if the limitations are related to the emulsion as a whole, the product or any additional element. The second issue raised by the Examiner is whether the weight ratio is relative to the inverse emulsion as a whole, or the product resulting from the admixing. The third issue raised by the Examiner is whether the anionic acrylic polymer is required to be polymerized or not because the claim uses the phrase "obtained by." The fourth issue raised by the Examiner is whether the concentration of acrylic monomer is relative to the weight of emulsion as a whole or the product within the emulsion. The fifth issue raised by

the Examiner is whether the word wherein refers to the inverse emulsion or to the product of admixing. The final issue raised by the Examiner regards the meaning of the word concentration.

The Applicants respectfully traverse this rejection by responding to the Examiner's queries. In regard to the first issue, the clauses after the two wherein statements are defined in the text of each clause. For example, the first clause regarding the weight ratios would refer to the period prior to polymerization since the polymer is in the resultant emulsion and there is no "oil phase" or "aqueous phase" at that point in time. The second clause clearly refers to the polymer and sets forth the monomers (i & ii) and method (emulsion polymerization) used to prepare the polymer. The third clause clearly refers to the monomer before polymerization although the acid group would still be present in the polymer. And the fourth clause refers to monomers prior to polymerization because you do not have a ratio of monomers in a polymer but rather moieties.

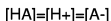
The Examiner's second issue relates to whether the weight ratio is relative to the inverse emulsion as a whole, or the product resulting from the admixing. The ratio is for the two phases used to prepare the emulsion polymer, including the monomers dissolved in each phase.

The Examiner's third issue relates to whether the anionic acrylic polymer is required to be polymerized or not because the claim uses the phrase "obtained by." The "product" is an emulsion polymer. The claimed product is the emulsion which comprises an emulsion polymer.

The Examiner's fourth issue relates to whether the concentration of acrylic monomer (in clause 4) is relative to the weight of emulsion as a whole or the product within the emulsion. The subject concentration is to the relative concentration of one monomer to the other.

The Examiner's fifth issue relates to the meaning of the word concentration. In Clause 4, the concentration is a relative concentration or a ratio. The ratio of the weights of the hydrophobic acrylic monomer to anionic acrylic monomers is from 1:1000 to 5:100.

The Examiner also objects to the term "strongly acidic." The Applicants respectfully traverse the Examiner's rejection. "Strongly acidic" and "strong acid" have a well-recognized meaning in chemistry. According to the Bronsted-Lowry theory, the strength of an acid is related to its degree of dissociation in water and strong acids are those for which essentially all of the acid molecules ionize in a 1M aqueous solution. This means that in aqueous solution at standard temperature and pressure the concentration of hydronium ions is equal to the concentration of strong acid introduced to the solution:



For strong acids the pH of their solution is dependent upon their concentration:

$$pH=-\log[H^+]=-\log[AH]$$

Whether an acid is strong or not can be simply determined by measuring the pH of its aqueous dilute solution and verifying the exactness of the above expression.

On the contrary, for weak acids:

$$[HA]>>[H^+]=[A^-] \text{ and } pH=-\log[H^+]>>-\log[AH]$$

In this case, the pH of their aqueous solutions depends on the value of the dissociation constant. It follows then, that the expression "strongly acidic" can be retained.

The Applicants respectfully assert that Claims 1-8 are now in condition for allowance under 35 U.S.C. §112, second paragraph.

Claims 1-8 stand as rejected under 35 U.S.C. 103(a) as unpatentable over US Patent NO. 5,721,313 to Yeung. It is the Examiner's position that Yeung teaches polymer emulsions formed by the inverse polymerization of ethylenically unsaturated carboxylates, ethylenically unsaturated non-ionic monomers, ethylenically unsaturated monomers containing one or more sulfonates, and ethylenically unsaturated monomers having surface active properties. The Examiner cites 2-acrylamido-2-methyl propane and stearyl methacrylate as exemplary of such polymers and notes that Yeung teaches using a crosslinking agent. The Examiner concludes that one of ordinary skill in the art would have been motivated to select stearyl methacrylates as the surface active monomer to optimize the amount of solids in the emulsions, thus making the claimed invention as a whole obvious.

The Applicants respectfully traverse the Examiner's rejections for the following reasons. There is nothing in Yeung that would lead one of ordinary skill in the art to produce the subject invention. The anionic acrylic polymer of Claim 1 lacks monomer (b) of Yeung, which is non ionic in nature and is evidently different from monomer (d) (col. 2, l. 42-52). The anionic acrylic polymer claimed in the present application is only made from anionic acrylic monomers and hydrophobic acrylic monomers (possibly in the presence of a crosslinking agent, which is a compound containing two or more ethylenic groups (see par [0027])).

Starting from the general description of '313, one of ordinary skill in the art would have to eliminate the essential monomer (b) and to choose the hydrophobic monomers in the general formula of (d) or in the description of the possible fourth component (d) (col. 3, l. 11-37). One of ordinary skill in the art would not have left out an essential monomer and thus the present invention, as claimed in claim 1, is not obvious.

CONCLUSION

For all the foregoing reasons, the Applicants submit that the application is in a condition for allowance. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned at (713) 243-8711 to discuss the steps necessary for placing the application in condition for allowance.

Respectfully submitted,

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